

October 29, 1970

Dear Dick,

Thanks for your letters of October 4, 6, 11, 19 (to Fred) and 23 (to Harold). Let me take them up in order; please read the enclosed supplement first.

Your letter of October 4: your deductions about the bullet we used are correct: it was soft-nosed, and (I am told) reloaded normally - that is, not to give a velocity less than normal. I do not dispute that such a bullet striking a melon would probably have a quite different effect from a hard/slow bullet striking the same target. Also, it might have a different effect on a melon from a hard/slow bullet hitting a skull, but you do not seem to insist that it would. I would suggest that a hard/slow bullet hitting a target hard enough to fragment it might shatter in somewhat the same way as a soft/slow bullet hitting a soft target. If you can provide a reason that they would probably be different, I would like to know it. You will note that in the supplement I have enclosed (pages Supp.2-4), I present several arguments about the differences between a melon and a skull which I feel could easily produce different results. That is, I think those reasons preclude a logically direct extrapolation from one case to the other. So far, all I know about ^{5th} bullets is that their effects might be different. (I mention this on page Supp.4, but only in connection with the problem of energy loss.)

Since you seem convinced that this kind of difference makes my tests completely invalid, I anticipate that you will not be satisfied with my conclusions in the supplement. I understand your arguments, and I hope that we understand each other's factual allegations. I don't expect you to agree with me; on the other hand, I would have to see certain evidence you mention for myself before I can form a judgment on it. That includes the "positive" evidence that the rear head shot could not have been a fully-jacketed bullet (page 4 of your letter), and the proof that the neck wound was "beyond doubt" inflicted from the front. I am of course interested in all such evidence.

Your page 5, 3rd paragraph: right; see page Supp.6-7.

Page 6, first paragraph: filament tape is quite tough and resilient, isn't it? Why specifically do you think it simulates skin badly?

Page 6, 5th paragraph: please see page 2 of my memo of 10/27.

Page 7: I will believe the evidence excluding CE399 when I see it. Don't take this personally, I say that to everyone.

Page 7-8: At this point I would just as soon have Alvarez agree with me that the tests are inconclusive as do more shooting. I agree that there are questions that cannot be settled without a very careful simulation, and a good enough one may be impossible.

Page 9: I appreciate your frankness. I think that personal friction pops up when one side or both run out of facts and solid arguments; I hope to avoid it. You might be surprised at the nature of criticism I and my colleagues in high-energy physics are used to; I'm not too easily upset.

Your letter of October 6: I think Harold and Fred have pretty well shot down your argument here. I am curious about the apparent change in speed, which I have noticed but not studied. But even if you had been right I would not have accepted your claim that a 33% difference in the calculated recoil momentum would make a gross difference in my case. For one thing, the fragment velocity estimated from the film would be increased in the same proportion as the recoil momentum, making the net effect somewhat smaller. But more important, the calculations I made were only order of magnitude in the first place. (See page Supp.14) If the first full sentence on page 6 was serious, I apparently failed to make clear the nature of my calculations (and, for that matter, the tests themselves.)

Your letter of October 11: see Supp.14-20. As you can see, I generally agree with you. Your letter did not discuss the "official" explanation for the fine fragments, which I find far from impossible but seriously flawed and contradictory.

I don't think the illustrations you provided really prove your point well. We are concerned with fragments that appear dust-like on an X-ray; would they not be completely invisible in a photo of gelatin? Perhaps you could do some

really persuasive tests - firing various kinds of bullets into targets (maybe gelatin would be good enough) and getting medical-type X-rays. If you could prove that large fragments of a full-jacketed bullet do not deposit fine fragments as they travel, your hypothesis would be confirmed. It isn't easy to prove a negative, but you might be able to do it. But I don't think that such an explanation for the fine fragments can be ruled out other than experimentally. Your letter doesn't indicate whether you have worried about that possible explanation.

In answer to your question on page 5: to some extent, bullets hitting a very hard surface (e.g., metal) do sometimes "splash" as if they were liquids. There are lots of photos of such things in "Flash," by Edgerton.

It is clear from what I wrote in the Supplement that I am not as convinced as you are by this theory of yours; I would insist on getting an expert study of the medical evidence. If you feel that I haven't presented the theory adequately, I would be glad to send out any material to all the recipients of the original draft report. But I don't expect you would want the three letters sent out without some changes. Let me know.

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Your final comments, page 8: how am I supposed to "stop" Alvarez? I can't tell him what to write or not write, even if I was involved in the testing, any more than I can stop my critic friends from using material I uncovered in the Archives. If he doesn't accept what you and I and others point out about the limitations of his work, what can I do? He has his biases, as we all do, but I expect that they will not overcome his reluctance to get involved in a controversy where he knows he will be proved wrong. I have no intention of shielding my opinions, or Alvarez', from private or public criticism.

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Your 10/19 letter to Fred: keep me informed if you do resolve this question.

Your letter of 10/23 to Harold: interesting, but I am not convinced. Bottom of page 1: are you deducing that no bullet could deposit fragments near that bone without damaging it? Or is that an expert medical opinion? Are you really sure that the bone was not damaged "enough" for the Commission's case? Was anyone looking for such damage? Would it show on the X-rays and photos?

I am not familiar with the letters to Howard you refer to. (I saw them, but have no copies.) Why are you so sure the doctor was lying in the letters as opposed to, say, in the Panel report?

I see now that this letter is rather short, compared to yours, and compared to the amount of time I have spent going over your arguments. Let me know if I have failed to respond to anything important.

Sincerely,

Paul

cc: Newcomb
Roffman
Schoener
Weisberg